

past, he is distinctly in the line of advance in all reputed methods in this branch of medicine. This book is a thoroughly modern text-book of striking value and a distinct acquisition to the literature of the subject.

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TRAUMATIC SEPARATION OF THE EPIPHYSES. With a Skiagraphic Atlas, Reproducing the Skiagrams Showing the Ossification of the Bones of the Hand and Wrist. By JOHN POLAND, F.R.C.S. London: Smith, Elder & Co. (Imported by G. P. Putnam's Sons, New York), 1898.

It is not too much to say that this work contains all that is known upon the subject of which it treats. It is not, however, merely an elaborate collection of cases or a compilation of the opinions of others, but in addition has the great merit of embodying much original work by the author upon the basis of the Röntgen rays, some of the results of this work being a considerable modification of views hitherto held as to the evolution of the ossification of some parts of the skeleton. After an elaborate historical introduction and a most interesting chapter on the anatomy and connections of the epiphyses, the general subject of epiphyseal separation is considered from various stand-points.

As to *etiology*, the general rule is advanced that, taken as a whole, the causes which produce these lesions are the same as those of fracture, but as a rule they are more severe. An injury which would be sufficient to produce a dislocation in an adult will in the child produce a separation of the epiphysis; epiphyseal separation in the child may indeed be called the analogue of dislocation in the adult. Of course, a lesser degree of violence applied to an epiphysis in a young subject with some constitutional affection is often sufficient to cause its separation without producing any displacement.

Emphasis is placed upon the importance of lesions of the juxta-epiphyseal regions in young children often following directly upon violent movements. Although not apparent from the outside, they are yet important lesions, since they are the immediate or remote cause of various inflammations of the bones or joints. Such lesions are of especial importance in children predisposed to tubercle or who have suffered from septic poisoning. Many of the pains called "growing pains" are due to juxta-epiphyseal sprains or injury. A juxta-epiphyseal sprain is often nothing but the first degree of an epiphyseal separation, in the same way that an articular sprain is nothing but the first degree of dislocation.

As to *frequency*, from statistics the author has given in each chapter it is clearly proved that these accidents are less common in early childhood than after the age of eleven or twelve. This is contrary to what has commonly been conjectured by former writers, viz., that young children are most frequently affected with traumatic epiphyseal separations. The belief probably arose from the fact that the epiphyses at this early age are considerably larger in proportion to the diaphyses and less strongly united to them than they are at a later period. In reality, the period from eleven or twelve to eighteen years of age is the one in which these injuries are most likely to be met with, which fact is

largely due to the circumstance that children at this age are more exposed to severe injuries such as are likely to cause epiphyseal separations.

As to *sex*, the extraordinary preponderance of males, which has long been known, is shown by the author's figures to be even greater than has been supposed. Out of the total number of cases (345) the sex is stated in 289 as 247 males and 42 females, all except three of the latter being at or below the age of puberty. After puberty, probably on account of the greatly diminished exposure to violence in games, plays, etc., traumatic separation of the epiphyses is almost unknown in females. The estimate of the relative frequency with which the different epiphyses suffer from this accident is of interest, but cannot be regarded as of permanent value until a larger number of cases have been accurately observed and recorded.

Mr. Poland says that "from practical experience one is led to the belief that separations of the lower end of the humerus in their various complicated forms are perhaps the most frequent.

"The epiphyses of the upper limbs are much more often involved than those of the lower. The author's figures are 426 in the upper extremity and 267 in the lower extremity."

After the lower epiphysis of the femur the lower epiphysis of the radius stands next in order of frequency in the number of specimens that can be shown, whereas at the upper end of the humerus there are few specimens compared with clinical cases. The fallacy lies in the fact that at the lower end of the femur the injury is more frequently followed by serious complications, amputation, or death.

The chapter on *pathology* deals with the varying character of the separations and with the associated lesions. After examining the museum specimens of epiphyseal separation contained in the London hospitals and the recorded cases of compound separation in which the condition of the separated fragments could be clearly seen, the author came to the conclusion that as a bone approaches a certain period in its development the traumatic separation would be of a more simple character. "In each long bone there is a *certain period* peculiar to its epiphyseal ends in which traumatic separation of the epiphysis is of a pure character, uncomplicated by fracture; *below this period*, but more especially *above*, the liability of the separation being accompanied by fracture becomes manifest."

In numerous experiments on the dead subject the author arrived at a precisely similar conclusion with regard to all the epiphyses of the long bones. A period is reached in each end of a bone when the epiphysis is fairly ossified and developed, and likewise the end of the diaphysis, leaving a weak point along the epiphyseal line of cartilage. The separation is then a pure one. When, however, the epiphysis is approaching the time of its complete union with the diaphysis, the separation will most probably be accompanied by a fracture of a portion of the diaphysis.

The summary of the *symptoms* and the *diagnostic points* of these injuries will bear some quotation. Mr. Poland begins by saying that "in their symptoms epiphyseal separations have more resemblance to dislocations than fractures." He adds: "The only symptom upon which reliance can be placed is the existence of unnatural mobility in the bone at the point where anatomy informs us the epiphysis is united to

the shaft, in the immediate neighborhood of the conjugal cartilage, always recollecting that this line in the same bone alters its position in the different periods of infancy and puberty. This mobility of a limb after obstetrical manipulations or rough handling of an infant should suggest at once an epiphyseal separation. When the periosteum has been stripped up or lacerated and permits displacement, the mobility will be even more marked and easier of detection in certain cases than in ordinary fractures, by reason of the regularity of the separated surfaces and the absence of all tooth-like projections."

Swelling and ecchymosis have nothing characteristic; but pain as a symptom of separated epiphyses is of great practical use, as it indicates the precise spot where the solution of continuity exists, viz., at the diaphysio-epiphyseal line. It is especially valuable in separations caused by indirect violence or muscular action rather than by direct violence, where there is great contusion and consequently great pain over a considerable area. In fractures near the joints or in separation of the epiphyses the pain is generally greater than in fractures elsewhere.

Deformity may be diagnostic if it is not obscured by swelling. The anatomical knowledge of the surgeon will lead him to recognize the shape of the displaced epiphyses or of the projecting edge of the end of the diaphysis.

The *prognosis*, as regards the subsequent growth of the bone after separation of its epiphyses, is of the greatest importance to the practical surgeon. This growth is not of necessity interfered with, because the epiphyseal cartilage performs its function in many cases as perfectly as before the injury.

Many instances of dwarfing of the limbs have been recorded as the result of epiphyseal injuries, but the most marked cases have occurred after injury to the upper epiphysis of the humerus. In this instance, as in other epiphyseal separations, the wasting and diminished growth of the limb are in part dependent upon the loss of the natural function or diminution in the use made of it, the result of anchylosis of the joint.

As might have been supposed, arrest of growth occurs most often at the upper epiphysis of the humerus and at the lower epiphyses of the femur, tibia, and radius, by reason of the late period of their union with the diaphyses and their being the most frequent seats of separation.

It is probably true that the reason these injuries are so seldom followed by arrest of growth is that the separation seldom occurs in the conjugal cartilage itself, but rather in the ossifying or ossified, spongy tissue which immediately adjoins the cartilage, and a certain amount of which always clings to the cartilage; again, that these injuries often occur still further toward the diaphysis, viz., in the juxta-epiphyseal spongy tissue.

The general principles of *treatment* do not differ materially from those governing the treatment of fractures near joints; the complications must be met in the same manner; reduction of deformity must be early, and if necessary must be accomplished by operation. Immediate massage is very properly not regarded with much favor.

The remainder, and by far the greater part of the book, is taken up with discussion of the recorded cases, the symptoms, and the treatment of the separations of the special epiphyses. It is by far the most thorough and comprehensive collection of cases yet brought together.

In the main the author's views as to all practical points are well founded and worthy of adoption.

The book is beautifully made, and the illustrations, especially the skiagrams, are admirable. Mr. Poland is to be congratulated on having made a notable addition to surgical literature and as having well and thoroughly met a want which has been recognized for years by practical surgeons, and especially by surgical teachers.

J. W. W.

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A CLINICAL TREATISE ON DISEASES OF THE BREAST. By A. MARMADUKE SHEILD, M.D. (Cantab.), F.R.C.S. New York: The Macmillan Company, 1898.

SEVERAL eminent surgeons have written upon diseases of the breast (Velpeau, Bryant, Birkett, Williams, the younger Gross), but a thoroughly modern treatise was greatly needed, and one written by such an accomplished surgeon as Marmaduke Sheild is to be warmly welcomed.

This subject is often slighted in our works upon surgery. In one of the most authoritative of modern text-books, a work which consists of three large volumes, the entire subject of diseases of the mammary gland is dismissed in about twenty-five pages. The book before us consists of some 500 pages. It is well illustrated, clearly written, and embodies the great practical experience of a surgeon who has studied this subject long and well. The profession is aware that Mr. Sheild has been for some time investigating these diseases, and our readers will recall his valuable paper upon abscess of the breast (*Lancet*, May 2, 1896) and his important contribution on the diagnosis of cancer (*British Medical Journal*, May 30, 1896). The first chapter of the book before us deals with anatomy and physiology. The author calls particular attention to the fact that the outline of the breast is not sharply defined, but from the gland a number of cusps or processes pass off in different directions. Some of the extensions pass toward the axilla, two or more to the margin of the sternum, and, as Heidenhain pointed out, sub-mammary prolongations may actually pass through the pectoral fascia. In an operation for carcinoma all of these outlying portions must be removed. In describing the lymphatics of the breast he summarizes the well-known views of Stiles, which were published in the *Transactions of the Edinburgh Medical Chirurgical Society*, vol. xi.

The chapter on acute mastitis and abscess is extremely valuable. Sheild believes that a vast majority of abscesses in either sex are due to the entrance of pyogenic organisms through an abrasion and their passage into the lymphatic ducts. Entrance of organisms into the milk ducts he does not regard as a probable cause. In many cases an abrasion cannot be detected by means of the naked eye, but can be discovered if a lens is used. Abscesses in nursing women can be prevented to a great extent by keeping the mother's nipple and the child's mouth clean. The author objects to the incision radiating from the nipple on the upper surface of the gland, which is so usually employed by surgeons. Such an incision produces an unsightly scar, does not afford good drainage, and will not cure the "abcès en bouton de chemise" of Velpeau. Sheild makes a radiating incision on the under surface of the breast, entering the knife at the thoracico-mammary junction.